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EXAMINER	
DUONG, CHRISTINE T	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/612,552	KALKUNTE ET AL.	
	Examiner	Art Unit	
	Christine Duong	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 September 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,8,9,11-23,25,27-31,33 and 34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8,9,11-23,25,27-31,33 and 34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 September 2007* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This is in response to the Applicant's arguments and amendments filed on 18 September 2007 in which claims 1-6, 8-9, 11-23, 25, 27-31, 33-34 are currently pending.

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the following items as described in the specification:

Shaped schedule wheel 124 in Fig. 4; and

Link layer component(s) 222 in Fig. 5.

Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top

margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. Claims 1, 3-4, 6, 8-9, 11-15, 18-19, 21, 23, 25, 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fan et al. further in view of Malaney et al.

Regarding **claims 1** and **19**, Fan et al. discloses a system to process packets received over a network, the system comprising:

a receiver configured to receive a plurality of data packets, each data packets belonging to at least one flow ("In an ATM switch or multiplexer, cells arrive at a bottleneck point and are stored in buffers to await transmission through the bottleneck towards their destinations", Column 5, Lines 4-6 and claim 1; where the "different flows", as claimed, are input from the at least 2 inputs of the multiplexer and the "thread", as claimed, is inherent to the sequence of computing instructions of the cells arriving, stored in buffers and await transmission);

a transmitter configured to transmit the plurality of data packets received by the receiver ("Cells are scheduled for transmission at absolute time epochs. When cells arrive, they are queued on a per-stream basis. That is, cells corresponding to stream i are buffered in a First-In First-Out (FIFO) stream queue which is denoted as Qi", Column 5, Lines 56-60 and "cells ... await transmission through the bottleneck towards

their destinations", Column 5, Lines 4-6 and claim 1; where the "thread", as claimed, is inherent to the sequence of computing instructions of the cells being transmitted);

a scheduler configured to populate at least one schedule of flow service based, at least in part, on quality of service characteristics associated with the at least one flow, the at least one schedule of flow service configured to identify a plurality of different flow candidates for service ("The scheduler architecture and method of this invention is based on peak rate shaping each stream to a locally computed scheduling rate. Various forms of traffic shaping can be achieved by changing the shaping algorithm", Column 6, Lines 41-44 and claim 1; where the "quality of service characteristics", as claimed, is described as "peak rate shaping" and the "thread", as claimed, is inherent to the sequence of computing instructions of the peak rate shaping each stream to a locally computed scheduling rate), the at least one schedule of flow service including a schedule wheel having a collection of slots, an individual slot including an array of entries corresponding to different egress ports ("The structure of the timewheel can be described as a circular array of entries numbered 0, 1, . . . N-1, where the nth entry points to a (possibly empty) list of eligible stream queues scheduled for time n (modulo N)", Column 9, Lines 12-16); and

a shaper process configured to access the schedule wheel to select from the plurality of different flow candidates ("In an ATM network, a traffic shaper takes an input cell stream and introduces delays to certain cells, where necessary, to produce an output cell stream which conforms to the parameters of the shaping algorithm", Column

6, Lines 30-33; where the "thread", as claimed, is inherent to the sequence of computing instructions of the delays introduced to certain cells).

However, Fan et al. fails to specifically disclose that the scheduler further configured to schedule service of the at least one flow based, at least in part, on a port bandwidth vector associated with an egress port used to transmit packets, individual elements within the port bandwidth vector identifying whether a particular port has been reserved for transmission, individual elements within the port bandwidth vector corresponding to different slots within the at least one schedule wheel, as claimed.

Nevertheless, Malaney et al. teaches "the Network Management Administrator must allocate a requisite amount of available network bandwidth to each of n corresponding users. When a new user appears and requests a specific QoS for his new traffic stream, the Network Management Administrator must decide, typically in real time in a practical network situation, whether the resources are available to accommodate this new request" (Malaney et al.: [0047]).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Fan et al.'s scheduler to identify whether a transmission port has been reserved because "the input links that are to be scheduled for transmission over the output link in such a manner that the desired QoS requirements for each input link arm will be satisfied" (Malaney et al.: [0047]).

Regarding **claims 3** and **21**, Fan et al. and Malaney et al. disclose everything claimed as applied above (see *claim 1* and *19*). In addition, the system further comprises a queue manager configured to queue packets based on the at least one

flow ("Queue manager 2 stores arriving cells in cell memory 1 in the form of stream queues, Q1, Q2, . . . QK", Column 5, Lines 11-15).

Regarding **claim 4**, Fan et al. and Malaney et al. disclose everything claimed as applied above (see *claim 3*). In addition, the queue manager is situated in a process-flow before the scheduler ("During each cell time, queue manager 2 may choose a cell in memory to be transmitted to the next stage in the switch. The choice of the next cell to transmit is determined by scheduler 3", Column 5, Lines 18-21 and Fig. 1).

Regarding **claims 6** and **23**, Fan et al. and Malaney et al. disclose everything claimed as applied above (see *claim 1* and *19*). In addition, at least one thread of the scheduler comprises more than one thread, different ones of the threads operating on different packet engines of the network processor ("scheduling stream queues serving cells with different quality-of-service (QoS) requirements while shaping the transmission rate to avoid congestion at bottlenecks within an ATM switch", Column 1, Lines 17-21).

Regarding **claims 8** and **25**, Fan et al. and Malaney et al. disclose everything claimed as applied above (see *claim 1* and *19*). In addition, the individual entries within the array of entries comprise the plurality of different flow candidates assigned to different service priorities ("extracting a stream queue identifier from the ready lists in order of priority", Column 13, Lines 66-67).

Regarding **claim 9**, Fan et al. and Malaney et al. disclose everything claimed as applied above (see *claim 7*). In addition, the scheduler comprises at least one thread to cache at least one of the following in memory of a packet engine in the processor: traffic parameters of a flow and a portion of a schedule wheel occupancy vector identifying

scheduling candidate vacancies in the schedule wheel ("The bit maps are initialized to zero, indicating that all timewheel time-bins are initially empty. A value of one in a bit map entry indicates that the corresponding timewheel time-bin is not empty", Column 12, Lines 45-49).

Regarding **claim 11**, Fan et al. and Malaney et al. disclose everything claimed as applied above (see *claim 1*). In addition, the schedule comprises multiple schedule wheels, different wheels corresponding to different ports ("by using two timewheels as follows... a fine grain (FG) timewheel, where each entry corresponds to one cell time and a coarse grain (CG) timewheel, where each entry corresponds to a several cell times", Column 9, Lines 35-41).

Regarding **claims 12** and **27**, Fan et al. and Malaney et al. disclose everything claimed as applied above (see *claims 1* and *19*). However, Fan et al. fails to specifically disclose that the scheduler comprises at least one scheduler thread to identify flows associated with best-effort service; and the shaper comprises at least one shaper thread to service a best-effort flow using egress port bandwidth unscheduled by the at least one schedule.

Nevertheless, Malaney et al. teaches "a "best effort service", is similar to a VBR connection, in that it is statistical (ie not CBR) in nature" (Malaney et al. [0028]) and "UBR connections are typically provided when the network has excess bandwidth available, and UBR defined traffic is carried through the network with no performance guarantees" (Malaney et al. [0028]).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to identify flows associated with best-effort service and service a best-effort flow using egress port bandwidth unscheduled by the at least one schedule because "UBR connection is not associated with any formal traffic descriptors or quality of services (QoS) quarantees" (Malaney et al. [0028]).

Regarding **claims 13 and 28**, Fan et al. and Malaney et al. disclose everything claimed as applied above (see *claims 12* and *27*). However, Fan et al. fails to specifically disclose that the at least one scheduler thread to identify flows associated with best-effort service comprises at least one thread to send a message to at least one shaper thread identifying a subset of a best-effort vector, individual entries in the best-effort vector corresponding to a flow.

Nevertheless, Malaney et al. teaches "Network infrastructure is typically provided to police network connections in such a manner that connections specified to be one of the aforementioned connection types are maintained within a corresponding envelope of performance characteristics" (Malaney et al. [0022]) and "a UBR connection is not associated with any formal traffic descriptors or quality of services (QoS) quarantees. UBR connections are typically provided when the network has excess bandwidth available, and UBR defined traffic is carried through the network with no performance guarantees" (Malaney et al. [0028]).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to identify flows associated with best-effort service comprises at least one thread to send a message to at least one shaper thread

identifying a subset of a best-effort vector, individual entries in the best-effort vector corresponding to a flow because "UBR connection is not associated with any formal traffic descriptors or quality of services (QoS) quarantees" (Malaney et al. [0028]).

Regarding **claim 14**, Fan et al. and Malaney et al. disclose everything claimed as applied above (see *claim 12*). In addition, the at least one shaper thread identifies a schedule wheel slot processed by the shaper ("stream queues are scheduled by means of scheduling memory 5A, which assumes the form of a timewheel data structure", Column 6, Lines 10-12); and the at least one scheduler thread schedules a flow for service based on the identified schedule wheel slot ("scheduling stream queues serving cells with different quality-of-service (QoS) requirements", Column 1, Lines 17-19).

Regarding **claim 15**, Fan et al. and Malaney et al. disclose everything claimed as applied above (see *claim 12*). In addition, the at least one shaper thread processes each slot for the same amount of time ("calculating a timestamp value for each stream queue based on its scheduling rate value", Column 15, Lines 5-6).

Regarding **claim 18**, Fan et al. and Malaney et al. disclose everything claimed as applied above (see *claim 1*). In addition, the schedule comprises a thread to schedule a flow for service in multiple slots ("several stream queues may become eligible during the same time slot", Column 10, Lines 44-48).

Regarding **claim 29**, Fan et al. and Malaney et al. disclose everything claimed as applied above (see *claim 19*). In addition, the at least one scheduler thread comprises at least one thread to cache traffic parameters of a flow in packet engine memory

("Control memory 4 stores information, corresponding to each stream queue, which is used to perform buffer management and scheduling", Column 5, Lines 35-38).

3. Claims 2, 5, 16-17, 20, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fan et al. and Malaney et al. further in view of Rose.

Regarding **claims 2** and **20**, Fan et al. and Malaney et al. disclose everything claimed as applied above (see *claims 1* and *19*). However, Fan et al. and Malaney et al. fail to specifically disclose that the plurality of data packets comprise Asynchronous Transfer Mode (ATM) cells; the at least one flow comprises at least one of virtual circuits and virtual paths; and the quality of service characteristics comprise at least one of the following classes: Constant Bit Rate (CBR) and Variable Bit Rate (VBR).

Nevertheless, Rose teaches "The data path (e.g., ATM cells, frames, etc.)" (Rose Column 2, Line 49), "ATM connection type (VPC or VCC)" (Rose Column 6, Line 4) and "Traffic contract (e.g., ABR, UBR, VBR, CBR, GFR)" (Rose Column 6, Line 8).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have the plurality of data packets comprise Asynchronous Transfer Mode (ATM) cells, the at least one flow comprises at least one of virtual circuits and virtual paths and the quality of service characteristics comprise at least one of the following classes: Constant Bit Rate (CBR) and Variable Bit Rate (VBR) because it would appropriate for "an ATM management task" (Rose Column 5, Line 14).

Regarding **claims 5** and **22**, Fan et al. and Malaney et al. disclose everything claimed as applied above (see *claims 1* and *19*). However, Fan et al. and Malaney et al. fail to specifically disclose that the at least one thread communicates a message to a

subsequent thread via at least one neighbor register provided by a packet engine processing the at least one thread.

Nevertheless, Rose teaches "The LMI, OAM, and signaling messages passed back to the supervision message system 220 from the connection management task 226 are sent directly to a buffer management block 234 for queuing in queues 236, and subsequent output" (Rose Column 5, Lines 29-33).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to communicate a message to a subsequent thread via at least one neighbor register provided by a packet engine processing the at least one thread because "the physical layer management task 228 communicates with the resource manager 222, notifying the latter of the (up/down) status of physical ports" (Rose Column 5, Lines 26-29).

Regarding **claim 16**, Fan et al. and Malaney et al. disclose everything claimed as applied above (see *claim 1*). However, Fan et al. and Malaney et al. fail to specifically disclose that the shaper is configured to: queue flows associated with ports having flow control asserted; and dequeues the flows after flow control is deasserted.

Nevertheless, Rose teaches "The queues 236 are coupled to a two-tiered hierarchical shaper/scheduler block 238, having a hierarchy level-1 shaper/scheduler and a hierarchy level-2 shaper/scheduler, that selects a flow for service" (Rose Column 8, Lines 22-25) and "a dequeuing process 800 of the two-tiered hierarchy shaper/scheduler 238" (Rose Column 13, Lines 24-25).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to queue flows associated with ports having flow control asserted; and dequeues the flows after flow control is deasserted because there is a need for "once a packet is queued, the flow associated with the packet is sent to the shaper/scheduler block 238 for shaping and scheduling" (Rose Column 8, Lines 27-30) and "an output service request for a data unit" (Rose Column 13, Line 28).

Regarding **claim 17**, Fan et al. and Malaney et al. disclose everything claimed as applied above (see *claim 16*). However, Fan et al. and Malaney et al. fail to specifically disclose that the shaper is configured to queue the flows with identification of classes of service associated with the flows and selects flows for servicing after flow control is deasserted based on the identification.

Nevertheless, Rose teaches "The flow classification and routing block 218 determines whether a flow has been set up for an incoming data unit, and determines the class of traffic that the flow is assigned" (Rose Column 4, Lines 3-5) and "Assignment of the Flow ID is dependent on the classification of the flow" (Rose Column 4, Lines 11-12).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to queue the flows with identification of classes of service associated with the flows and selects flows for servicing after flow control is deasserted based on the identification because "the class assigned to the flow determines the QoS to be provided for that flow" (Rose Column 4, Lines 13-15).

4. **Claims 30-31, 33-34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Malaney et al. further in view of Rose and Fan et al..

Regarding **claim 30**, Malaney et al. discloses a system to process Asynchronous Transfer Mode (ATM) cells received over a network, the system comprising:

multiple line cards, an individual line card including (terminal 100 and 214, Fig. 2):

at least one physical layer component (PHY) (corresponding lines 200, 202, 216, 218, Fig. 2); and

at least one network processor having multiple packet engines having access to instructions to provide (the following elements, either alone or in combination: corresponding regulator 208, buffer/FIFO scheduler 209 and multiplexer 204):

a receiver configured to receive a plurality of data cells, the each data cell belonging to at least one virtual circuit ("Each incoming traffic source on corresponding lines 200-202 is regulated in a corresponding regulator 208", [0010] and Fig. 2); and

a transmitter configured to transmit the plurality of data cells received by the receiver ("The multiplexer 204 outputs a regulated traffic stream on the transmission path 102 which connects across a boundary of the network 106 to the edge switch 104", [0010]);

a scheduler configured to generate at least one schedule for virtual circuit service, based at least in part, on quality of service classes

associated with the virtual circuits, the at least one schedule comprising a schedule wheel having a collection of slots, an individual slot including an array of entries corresponding to different ports, individual entries within the array of entries including virtual circuit service candidates assigned to different service priorities ("the sources thereafter being aggregated in a buffer/FIFO scheduler 209", [0010] and "Users (not shown) of terminals 100 and 118 are typically interested in achieving a predictable QoS from end-to-end ... Important QoS parameters in packet networks include packet loss, end to end packet delay and end to end packet timing jitter caused by delays and/or overflows in finite buffers in the various network elements (eg. 104, . . . , 110) between the two users" [0009] and "the Network Management Administrator must allocate a requisite amount of available network bandwidth to each of n corresponding users. When a new user appears and requests a specific QoS for his new traffic stream, the Network Management Administrator must decide, typically in real time in a practical network situation, whether the resources are available to accommodate this new request", [0047]), the scheduler further configured to schedule service based on, at least in part, a port bandwidth vector associated with an egress port used to transmit cells, individual elements within the port bandwidth vector identifying whether the egress port has been reserved for transmission, individual elements within the port bandwidth vector corresponding to different slots within the schedule

wheel and the shaper identifies virtual circuits to service based on the schedule wheel slots ("the Network Management Administrator must allocate a requisite amount of available network bandwidth to each of n corresponding users. When a new user appears and requests a specific QoS for his new traffic stream, the Network Management Administrator must decide, typically in real time in a practical network situation, whether the resources are available to accommodate this new request"; Malaney et al.: [0047]); and

a shaper process configured to identify virtual circuits to service based on the schedule wheel slots ("The shaper can vary the delay of packets passing through it, and accordingly, the traffic output from a shaper can be constrained to meet specified criteria such as peak packet rate, sustained packet rate and/or average packet rate", [0006]); and

a switch fabric interconnecting the multiple line cards ("The switch 104 can perform a switching function alone, or alternatively, can in addition perform regulation/aggregation functions", Fig. 2).

However, Malaney et al. fails to specifically disclose that the scheduler process services virtual circuit on quality of service classes associated with the virtual circuits.

Nevertheless, Rose teaches "ATM connection type (VPC or VCC)" (Rose: Column 6, Line 4).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to allow Malaney et al.'s system to service for virtual

circuit because the user will be able to "lease VPC and/or VCC services from a communication carrier" (Rose: Column 3, Lines 3-4).

Additionally, Malaney et al. and Rose disclose everything claimed as applied above. However, Malaney et al. and Rose fails to specifically disclose the at least one schedule comprising a schedule wheel having a collection of slots, an individual slot including an array of entries corresponding to different ports, individual entries within the array of entries including virtual circuit service candidates assigned to different service priorities.

Nevertheless, Fan et al. teaches "The structure of the timewheel can be described as a circular array of entries numbered 0, 1, . . . N-1, where the nth entry points to a (possibly empty) list of eligible stream queues scheduled for time n (modulo N)" (Fan et al.: Column 9, Lines 12-16), "extracting a stream queue identifier from the ready lists in order of priority" (Fan et al.: Column 13, Lines 66-67).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to add a timewheel with array of entries corresponding to ports for scheduling because it allows the system to have a "flexible and scalable architecture" (Fan et al.: Column 2, Lines 30-31).

Regarding **claim 31**, Malaney et al, Rose and Fan et al. discloses everything claimed as applied above (see *claim 30*). However, Malaney et al. fails to specifically disclose that at least one of the process threads communicates a message to a thread in a subsequent one of the processes via at least one neighbor register provided by a packet engine processing the at least one of the process threads, as claimed.

Nevertheless, Rose teaches that "The LMI, OAM, and signaling messages passed back to the supervision message system 220 from the connection management task 226 are sent directly to a buffer management block 234 for queuing in queues 236, and subsequent output" (Rose: Column 5, Lines 29-33).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Malaney et al.'s system to communicate a message to a neighbor because they are "passed directly to a supervision message system block 220 for setting up/tearing down connections, etc." (Rose: Column 3, Lines 57-59).

Regarding **claim 33**, Malaney et al, Rose and Fan et al. discloses everything claimed as applied above (see *claim 30*). In addition, the at least one thread of the scheduler process comprises at least one thread to identify flows associated with best-effort service; and the at least one thread of the shaper process comprises at least one thread to service a best-effort flow using egress port bandwidth unscheduled by the at least one schedule ("a "best effort service", is similar to a VBR connection, in that it is statistical (ie not CBR) in nature"; Malaney et al.:[0028] and "UBR connections are typically provided when the network has excess bandwidth available, and UBR defined traffic is carried through the network with no performance guarantees"; Malaney et al.: [0028]).

Regarding **claim 34**, Malaney et al, Rose and Fan et al. discloses everything claimed as applied above (see *claim 33*). In addition, the at least one thread to identify flows associated with best-effort service comprises at least one thread to send a

message to a shaper thread identifying a subset of a best-effort vector, individual entries in the best-effort vector corresponding to a flow associated with best-effort service ("Network infrastructure is typically provided to police network connections in such a manner that connections specified to be one of the aforementioned connection types are maintained within a corresponding envelope of performance characteristics"; Malaney et al.: [0022] and "a UBR connection is not associated with any formal traffic descriptors or quality of services (QoS) quarantees. UBR connections are typically provided when the network has excess bandwidth available, and UBR defined traffic is carried through the network with no performance guarantees"; Malaney et al.: [0028]).

Response to Arguments

Previous objection to the specification and claim informalities regarding claims 1, 19 and 30 are withdrawn in view of Applicant's amendment.

Previous 35 USC 112 rejections and 35 USC 101 rejections are withdrawn in view of Applicant's amendment.

5. Applicant's arguments regarding claims 1, 19 and 30 have been fully considered but they are not persuasive.

In response to Applicants' arguments regarding claims 1, 19 and 30 that Malaney does not appear to teach or suggest a port bandwidth vector having individual elements within the port bandwidth vector corresponding to different slots within the schedule wheel, it has been noted that the reference Fan et al. read on Applicants' schedule wheel having a collection of slots, an individual slot including an array of entries corresponding to different egress ports. Further, the timewheels in Fan et al. use a port

bandwidth vector as disclosed: "the timestamp TSi is updated based on the current value of TSi, the current time CT, and the dynamic rate Ri" (Fan et al. Column 9, Lines 1-2), "The traffic shaper should be capable of supporting a wide range of rates. To support connection rates in the range 4 Kbps to 622 Mbps requires about 150 K entries in the timewheel. Each entry consists of six pairs of head/tail pointers" (Fan et al. Column 9, Lines 26-30), "stream queues are assigned to either the FG timewheel or the CG timewheel, according to rate" (Fan et al. Column 9, Lines 42-44) and "Rates are assigned to the two timewheels as follows: FG timewheel 300Kbps to 600 Mbps, CG timewheel: 4Kbps to 300 Kbps" (Fan et al. Column 9, Lines 64-67). Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant to fully consider the references in its entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner. Therefore, Fan et al. does disclose the teaching of a port bandwidth vector having individual elements within the port bandwidth vector corresponding to different slots within the schedule wheel.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

CTD 11/21/2007 CTD

Seema S. Rao
SEEMA S. RAO 11/26/07
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600